Embedding Diversity and Equity Conversations in Cardiovascular Pharmacology: Teaching Arrhythmia Management from A Diversity Context

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Background and Objectives: Foundational and pharmaceutical sciences are an integral part of health professions education. Ever since the publication of the seminal 1910 Flexner Report, foundational sciences are placed early in the medical education curriculum to maximize learners’ ability to apply these principles in the evaluation and management of diseases. This “traditional” approach contextualizes clinical decision-making in a foundational sciences reference frame and has been extended to other health professions education programs such as pharmacy education. However, the integration of foundational sciences with clinical application remains difficult to achieve and measure. To bridge this gap, we designed, implemented and assessed an Integrated Cardiovascular Simulation (ICS), placing it in the Second Professional Year (P2) of our 4-year Pharm.D. curriculum. ICS engaged P2 learners to begin to connect the pharmacotherapeutic management of congestive heart failure (CHF) and arrhythmia emphasizing the pharmacological basis of clinical decision-making while incorporating select elements related to empathy, cultural competencies such as a linguistic barrier, patient history taking, and communication strategies such as the “SBAR” technique.

Methods: ICS employed Case-Based Learning principles and focused on congestive heart failure (CHF) with preexisting arrhythmias as comorbidity. A Laerdal SimMan 3G manikin was programmed to present CHF symptoms. P2 student teams were assessed on accurate identification of both symptoms and the underlying pathophysiology. ICS was staged through ER presentation (phase 1), admission to the ICU (phase 2), and hospital stay and discharge (phase 3). Laboratory values were integrated during phase 2, while the manikin presented atrial and ventricular fibrillation, Torsades de Pointes, and asystole, allowing students to learn rhythm identification. Additionally, students practiced the SBAR communication technique and patient counseling skills, and recommended therapy, elaborating MOA and adverse effects. ICS was assessed through pre- and post-session quizzes and perception data.

Results: Respondents indicated that ICS helped them learn: 1) arrhythmia pathophysiology (85%), 2) EKG interpretation of arrhythmias (89%), 3) adverse effects of antiarrhythmic medications (93%), 4) clinical decision making (92%), and 5) communication skills between team members (85%). Ninety-one percent felt that ICS made the content more clinically relevant than lecture, while student perception of their interaction with the simulated patient was rated at 74%. Student performance improved on a post-test (80.2%) compared to the pre-test (66.9%), with an increase in symptom and arrhythmia pattern recognition (41.2% and 36.7% increase in the post-test).

Conclusion: High-fidelity ICS is a novel tool to achieve and assess the integration of foundational and clinical knowledge.